Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the Application.

Listing of Claims

Claim 1. (Currently Amended) A process for measuring and recording the thickness of an automotive trim panel material comprising the steps of:

providing an automotive trim panel polymeric material having a known shape, an outer surface and an inner surface defining a thickness of between 0.001 – 0.500 inches, and a region in which the thickness of said trim panel material may be measured;

providing a holding form having essentially the same shape as at least a portion of said trim panel material of known shape wherein the portion of the holding form which corresponds to the region of the trim panel material to be measured is metallic;

contacting the outer surface of said automotive trim panel material with said holding form such that said region to be measured is in contact with said metal;

contacting the ~~exposed~~ inner surface of the material at a first position in the region to be measured with ~~an~~ a shielded inductive sensor;

and generating a first output signal;

converting the first output signal of the sensor into a value that represents the thickness of the material at said first position;

contacting the ~~exposed~~ inner surface of the material at a second position with said inductive sensor;

and generating a second signal;

converting the second output signal of the sensor into a value of electrical current or voltage that represents the thickness of the material at said second position, and

generating a cross-sectional thickness profile of said material as between said first and second positions.

Claim 2. (Original) The process of claim 1 wherein the sensor is a linear analog sensor.

Claim 3. (Original) The process of claim 1 including the step of communicating said cross-sectional thickness profile in said material to a controller which is in communication with a cutting assembly to cut said material to a desired thickness, wherein said controller adjusts the thickness of a cut into said material based upon said cross-sectional profile thickness in said material to provide a cut of desired thickness.

Claim 4. (Original) The process of claim 3 wherein said cutting assembly comprises laser scoring.

Claim 5. (Original) The process of claim 3, wherein said sensor is attached to a robotic arm and the sensor is moved from the first position to the second position by said robotic arm.

Claim 6. (Original) The process of claim 3, wherein the sensor is mounted on a flexible mechanism to promote contact between the sensor and the material.

Claim 7. (Original) The process of claim 1, wherein the automotive trim panel is an instrument panel.

Claim 8. (Original) The process of claim 3, wherein the automotive trim panel material forms an air bag opening upon deployment of an air bag and said cut of said trim panel material weakens said material for air bag deployment.

Claim 9. (Withdrawn) The process of claim 1 including the step of communicating said cross-sectional thickness profile in said material to a controller which is in communication with a molding operation for said automotive trim panel material which controller instructs said molding operation to adjust molding conditions to thereby adjust thickness of the material exiting the mold based upon said cross-sectional thickness profile in said material to provide a material of substantially uniform thickness.

Claim 10. (Withdrawn) The process of claim 3 wherein said controller is additionally in communication with a molding operation for said automotive trim panel material wherein said controller instructs said molding operation to adjust molding conditions to adjust thickness of the material exiting the mold based upon said cross-sectional thickness profile in said material to provide a material of substantially uniform thickness.

Claim 11. (Withdrawn) The process of claim 10 wherein said adjustment of molding conditions to adjust thickness comprises adjusting the amount of material provided in the mold.

Claim 12. (Currently Amended) The process for measuring and recording the thickness of an automotive trim panel material comprising the steps of:

providing an automotive trim panel polymeric material having a known shape, an outer surface and an inner surface defining a thickness of between 0.001 – 0.500 inches, and a region in which the thickness of said trim panel material may be measured;

providing a holding form having essentially the same shape as at least a portion of said trim panel material of known shape wherein the portion of the holding form which corresponds to the region of the trim panel material to be measured is metallic;

contacting the outer surface of said automotive trim panel material with said holding

form such that said region to be measured is in contact with said metal;

contacting the ~~exposed~~ inner surface of the material at a plurality of positions in the region to be measured with ~~an~~ a shielded inductive sensor to generate a plurality of output signals,

converting said output signals into a value of electrical current or voltage that represents the thickness of the material at said plurality of positions;

generating a cross-sectional thickness profile in said material as between said plurality of positions; and

communicating said cross-sectional thickness profile in said material to a controller which is in communication with a cutting assembly to cut said material to a desired thickness, wherein said controller adjusts the thickness of a cut into said material based upon said cross-sectional profile thickness of said material to provide a cut of desired thickness.

Claim 13. (Original) The process of claim 12 wherein the automotive trim panel provides an air bag opening and said cut of said trim panel material weakens said material for air bag deployment.